*Jpn. J. Ent.*, **62** (4): 861–866. December 25, 1994

# A New Froghopper of the Genus *Aphrophora* (Homoptera, Aphrophoridae) from the Ryukyus, Japan

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**Abstract** A new froghopper, *Aphrophora paguma*, is described and illustrated. This species is endemic to Amami-Oshima Is. and Tokunoshima Is. of the Ryukyus, Japan.

Key words: *Aphrophora paguma*; new species; Aphrophoridae; Homoptera; Japan.

Through my recent field researches to the Amami group of the Ryukyus, a remarkable froghopper which is new to the Japanese fauna was obtained. In this paper, I am going to describe the froghopper as a new species, together with some account of the bionomics. Before going into details, I wish to express my hearty thanks to Mr. M. TOMOKUNI (National Science Museum, Tokyo; NSMT) and Prof. S. AZUMA (University of the Ryukyus, Okinawa; URN), for the loan of specimens. I also indebted to Mr. & Ms. M. HIRATATE (Saitama) and Mr. S. MAKINO (Amami-Oshima, Kagoshima) for offering materials or supporting my field work.

## ***Aphrophora paguma*** M. HAYASHI, sp. nov.

(Figs. 1–16)

Head and pronotum ochreous to castaneous, more or less darkened anteriad, with a mesal ivory-white fascia running from tylus to pronotum, somewhat widened posteriorly, and with an outer pair of calli pale ochreous except for central part; lateral parts of pronotum infuscated except for marginal ridge pale ochreous; pronotum coarsely and strongly punctulate; scutellum (mesonotum) ochreous becoming paler toward apex; abdomen dull ochreous (Fig. 1). Forewing glossy ochreous; middle part of costal area obliquely pale ochreous; area along vein 2A paler or whitish; dark obscure spots appearing around second branching of Sc+R, near middle part of 1A, and on subapical part of 2nd anteapical (discal) cell (sometimes spread beyound both M and CuA); hind wing hyaline and smoky.

Venteral part of body dark ochreous to dark castaneous (generally paler in ♂♂) and covered with dense whitish hairs; clypeus and clypellus pale ochreous in ♂♂; distal part of pronotal paranotum, lateral parts of mesanepisternum and anterior protrusion of mesepimeron pale ochreous; rostrum ochreous with 3rd labial segment mostly infuscated or black; legs concolorous to thoracic sterna, with fore and mid

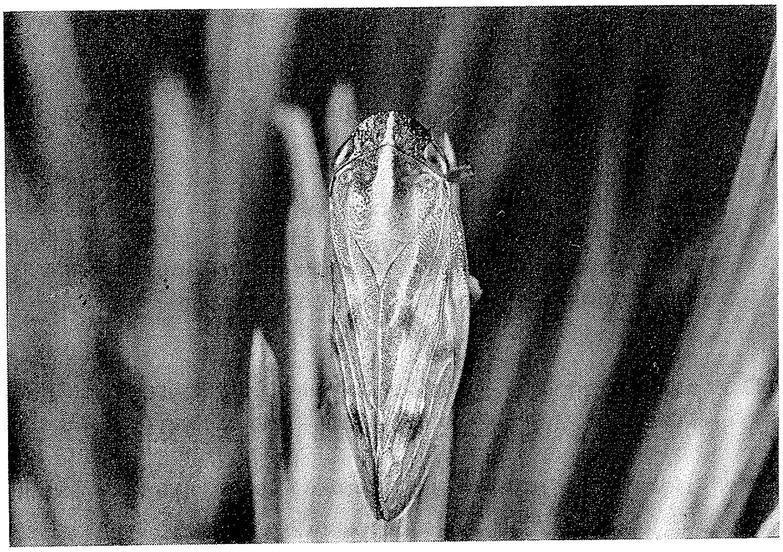
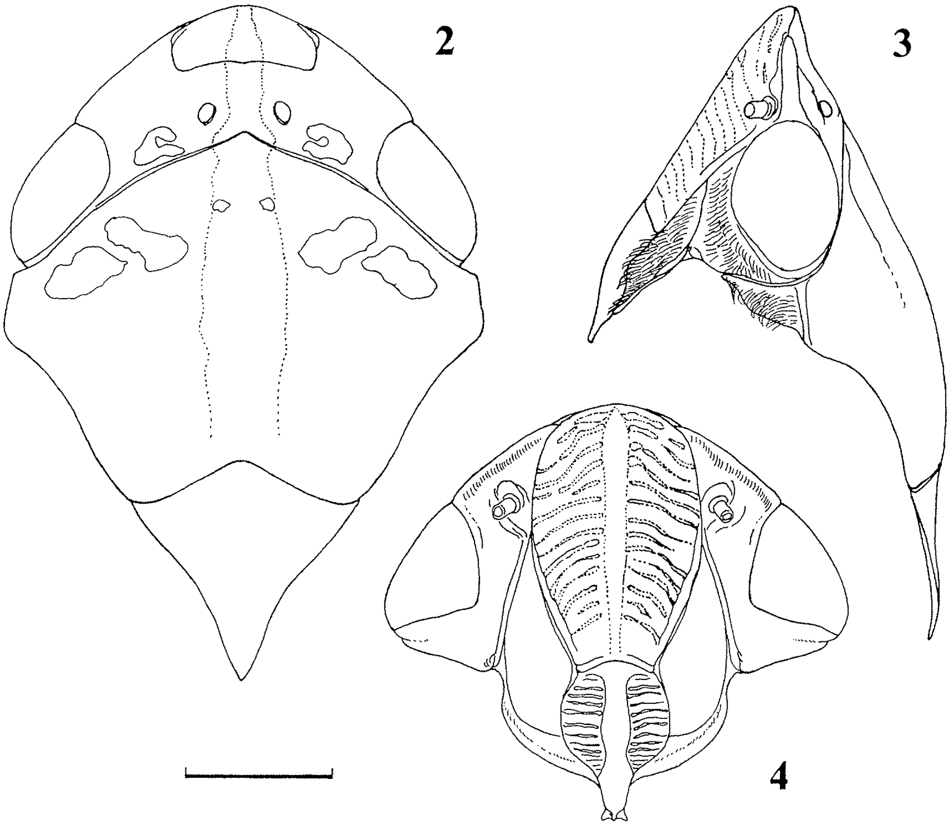


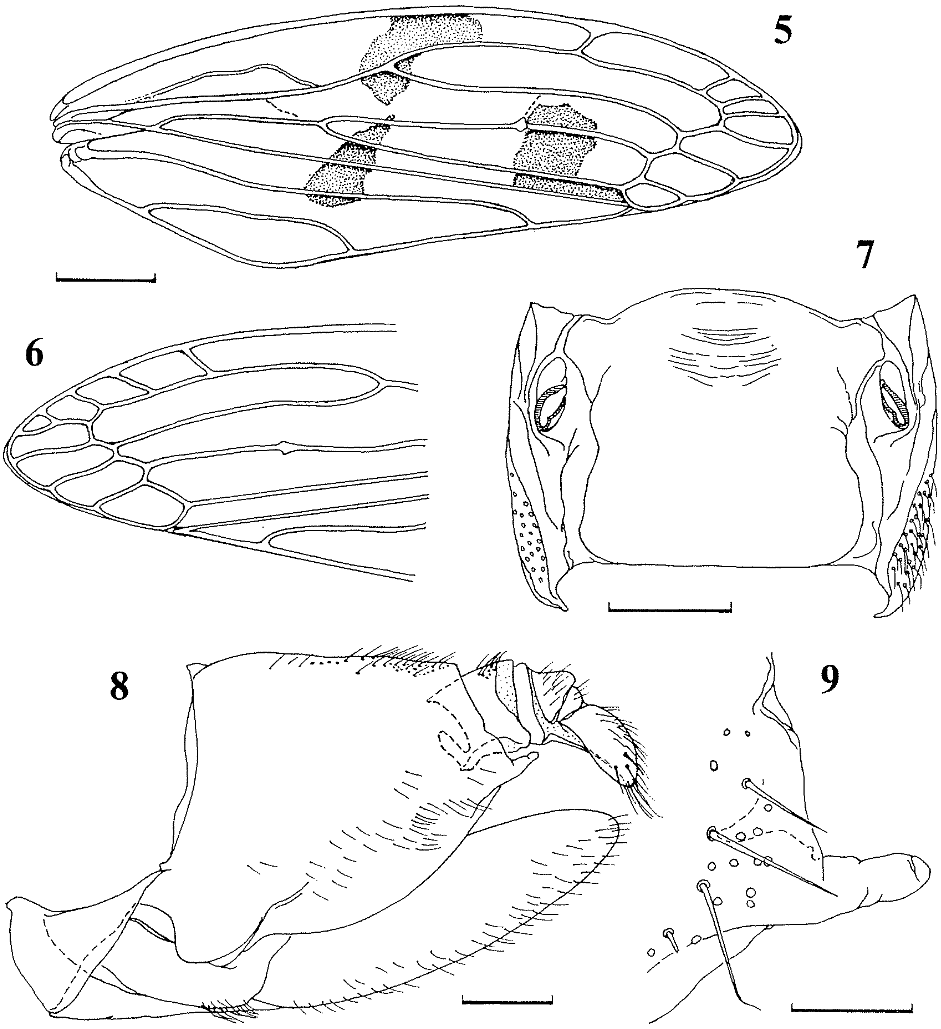
Fig. 1. *Aphrophora paguma*, sp. nov. (♀), on conifer leaves of a Ryukyu pine tree (Amami-Oshima Is., 21 May 1993). Photo by M. HAYASHI.



Figs. 2–4. Head and thorax (♂). —— 2–3, Head and thoracic nota in dorsal (2) and lateral (3) views; 4, head in ventral view (rostrum removed). Scale: 1 mm.

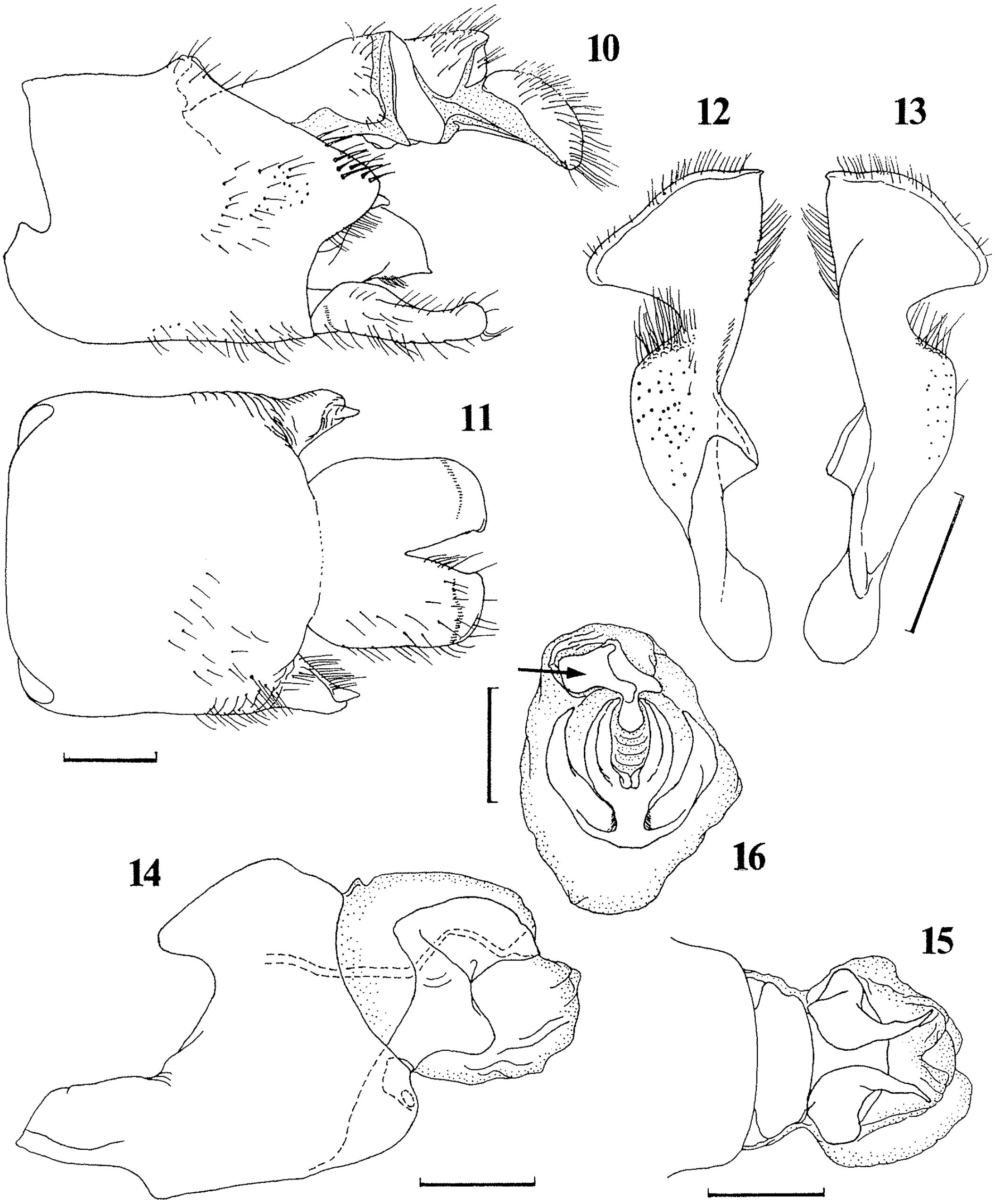
legs in ♀♀ more or less darkened; spines of hind tibia and tarsus black apically.

Head slightly narrower than pronotum, with anterior margin triangularly dilated and unicarinate; distance between ocelli distinctly narrower than tylus; vertex with a median ridge, widened anteriorly and posteriorly; clypeus flat and long, ca. 1.6× as long as clypellus, bearing 12–15 obscure transverse striations; rostrum extending to apex of hind coxae. Pronotum slightly shorter than wide, ca. 1.5× as long as scutellum (mesonotum), with a median carina distinct in anterior 1/2, and with posterolateral margin somewhat emarginate and caudal margin concavely sinuate at middle (Figs. 2–4). Forewing slender, with costal margin slightly arched and apex obtuse; 1st anteapical cell elongate, as long as 2nd one; apical veins 6–7 in number, some of them often fused basad or disappearing; cross veins sometimes



Figs. 5–9. 5, Right forewing (dotted area showing infuscate spots); 6, distal part of left forewing in a same specimen; 7, male 8th abdominal segment (ventral aspect); 8, female pygofer and valvifer 1 in lateral view; 9, small saccate process on lateral lobe of ♀ pygoer. Scales: 1 mm (5–6), 0.3 mm (7–8) and 0.1 mm (9).

appearing between veins R and M+Cu (obliquely) and/or veins R and M (Figs. 5–6). Male 8th abdominal segment elongate with sternum nearly as long as wide (Fig. 7); caudal margin of ♀ 7th sternum nearly straight; ♀ pygofer conical, with a small saccate process at apex of lateral lobe, and with ovipositor (valvula 3) ex-



Figs. 10–16. Male genitalia. —— 10–11, Pygofer in lateral (10) and ventral (11) views; 12–13, right style, dorsal (12) and ventral (13) aspects; 14–15, aedeagus and connective in lateral (14) and dorsal (15) views; 16, aedeagus in apical view (gonopore shown by an arrow). Scales: 0.2 mm (10–13) and 0.1 mm (14–16).

tending beyond pygofer but not exceeding anal style (Figs. 8–9).

*Male genitalia* (Figs. 10–16). Pygofer barrel-shaped in ventral view, with mid-dorsal line about 2/3 the length of mid-ventral one; lateral lobe of pygofer inflated with dorsocaudal margin nearly straight, pygofer disc triangular and pygofer hook conical and extending caudad. Subgenital plates wide and hairy, parallel-sided, truncate apically, and fused to each other in basal 1/2. Styles stout and recurved, incrassate and lamellate distad, with inner tooth cuspidate and outer tooth rounded, and with middle part widely swollen dorsad. Aedeagus and connective very short; connective triangular with protrusive lateral part of ventral base; aedeagus intromittent, entirely covered with membranous theca and fused to apical mid-ventral inner surface of connective; apical part of aedeagus much swollen laterad and caudoventrad, and bifurcated to form a pair of compressed tips divergent caudally.

Body length to tip of folded forewing (mean): ♂, 9.8–11.6 mm (10.3 mm); ♀, 11.3–12.5 mm (12.1 mm).

*Type material.* Holotype: ♂, ca. 3 km SSE of Fukumoto, Yamato, Amami-Oshima Is., Ryukyus, Japan, 21. V. 1993, M. HAYASHI *et al.* Paratypes: [Amami-Oshima Is.] 13 ♂ 10 ♀, same data as holotype; 2 ♂ 1 ♀, same data except 22. V. 1993; 1 ♀, Materiya Fall, Yamato, 21. V. 1993, M. HAYASHI *et al.*; 1 ♂ 3 ♀ (NSMT), Mt. Yuwan-dake, Uken, 12. X. 1988, A. & S. SAITO; 1 ♀, same locality, 5. IX. 1992 (light trap), M. HAYASHI *et al.*; 4 ♂ 1 ♀ (NSMT), same locality (470 m), 12–14. X. 1988, M. OWADA; 1 ♀ (URN), Yuwan, Uken, 14. X. 1988, S. AZUMA; 1 ♂, Nagara, Uken, 7. X. 1988, M. HAYASHI *et al.*; 1 ♀, Akatsuchi-yama, Sumiyô/Uken, 8. X. 1988, M. HAYASHI *et al.*; 1 ♂, same locality, 14. IX. 1991, M. HIRATATE; 1 ♀, Mt. Yui-dake, Setouchi, 15. IX. 1991 (light trap), M. HIRATATE; 1 ♀ (URN), Chûo-rindô, 15. X. 1988, S. AZUMA; 1 ♂ 1 ♀, Kinsakubaru, Naze, 18. V. 1993 (light trap), M. HAYASHI *et al.*; 1 ♂, Ankyaba, Tatsugô, 18. V. 1993, M. HAYASHI *et al.*; 1 ♀ (URN), Akaogi, Tatsugô, 17. X. 1988, S. AZUMA. — [Tokunoshima Is.] 5 ♂ 1 ♀, Mt. Inokawa-dake, Tokunoshima, 29. V. 1991, C. KUWABARA; 3 ♂, Nishi-Agina, Amagi, 1. IX. 1992 (light trap), M. HAYASHI *et al.*; 1 ♀, Inutabu, Isen, 16. VII. 1993, M. HAYASHI *et al.*

*Distribution.* Japan; Ryukyus (Amami-Oshima Is. and Tokunoshima Is.)

*Remarks.* Compared with other congeners of Japan and her adjacent areas, this froghopper is characterized by the anterior dilation of head, the elongate 8th abdominal segment in ♂♂, the shape of aedeagus in ♂ genitalia and the fusion of aedeagal base to connective much more apical. The species is also unique in the color pattern; a white median line on dorsum, markings and spots on forewing, etc.

*Bionomics.* This froghopper is preferably found in montane areas, and feeds exclusively on the Ryukyu pine tree, *Pinus luchuensis* MAYR (Pinaceae); it is certain that this pine tree is a main host plant of the insect. According to the collection data, adults occur from May to October, with late May and mid-October as the probable peak periods. Nymphs construct masses of froth near bases of current branches, and eclose outside of the masses, and adults usually perch on pine twigs, resting among conifer leaves (Fig. 1). Overwintering is probably performed in the egg stage. Adults are sometimes attracted to the light.

(Received May 5, 1994; Accepted July 8, 1994)

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## 投稿方法の変更について

本誌は，これまで活字組版による印刷を続けてきましたが，時の流れはどうしようもなく，1995年の第63巻から電算写植による組版とすることに変更となります．それに伴って投稿方法も多少変更しなければなりません．いづれ投稿規程を正式に変更しますが，それまで暫定的につぎのような方法で処理したく考えていますので，今後の投稿についてはよく注意して下さい．

1．当分の間，従来通りの規定によって投稿下さい．しかしその際に，フロッピーディスクの有無と入力機種・ソフト名を必ず明記して下さい．

2．校閲完了後，著者に詳細を連絡しますので，その指示に従って再投稿下さい．その際は，フロッピーディスクと共に打ち出し原稿（2部）を添えてお送り下さい．

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なお，最近の投稿原稿の中で，規定に沿ってないものがかなり見られます．どうか投稿規定を熟読の上，お送り下さるよう改めてお願いします．